

Remarks

The above Amendments and these Remarks are in reply to the Office Action mailed November 5, 2003. Claims 1-15 and 18-31 were pending in the Application prior to the outstanding Office Action. In the Office Action, the Examiner rejected claims 1-15 and 18-31. The present Response cancels claim 2, amends claims 1, 21, 22, 25, 27, 28, and 29, and adds claims 32-67, leaving for the Examiner's present consideration claims 1, 3-15, and 18-67. Reconsideration of the rejections is respectfully requested.

I. Examiner Interview Summary

Attorneys and Applicants conducted a phone interview with the Examiner on February 18, 2004. In the interview, the patentability of claim 1, as well as the patentable distinctions with respect to the cited prior arts of *Meleka* and *Fleming* were discussed. Among the distinctions are the chemical reaction and deterministic nature of the present invention and the method of shaping the surface to a pre-determined contour at a controllable material removal rate by selecting a reactive species to react with selected materials which comprise the surface. The Examiner indicated that such distinctions seem patentable over cited arts, pending on the exact wording of the claims. Claims 33-67 are proposed to claim the patentable distinctions mentioned above.

II. Rejections under 35 U.S.C. §102(b)

Claims 1, 2, 7, 9-11, 18-20 and 22-31 are rejected under 35 U.S.C. §102(b), as being anticipated by U.S. Patent 4,035,604 issued to *Meleka et al.* (hereinafter, *Meleka*).

Meleka teaches vaporizing or disintegrating burrs on an electrically conductive article using the energy brought by the high temperature ions concentrated at the burrs. It is a physical process by nature and no reactive species are used. On the contrary, the reactive atom plasma processing in claims 1, 2 (canceled), 7, 9-11, 18-20 and 22-31 smoothes the surface of an article by applying a flow of reactive species to the surface, which is by nature a process of chemical reactions between the

surface and the reactive species. *Meleka* therefore cannot anticipate claims 1, 2, 7, 9-11, 18-20 and 22-31.

Claims 1-11, 19-29 and 31 are rejected under 35 U.S.C. §102(b), as being anticipated by U.S. Patent 5,000,771 issued to *Fleming, Jr. et al.* (hereinafter, *Fleming*).

Fleming teaches smoothing the surface of a refractory material by vaporization using extreme thermal heat (several thousand degrees centigrade) generated by a plasma fireball, which is by nature a process of physical process and no reactive species is used. On the contrary, the reactive atom plasma processing in claims 1-11, 19-29 and 31 smoothes the surface of an article by applying a flow of reactive species to the surface, which is by nature a process of chemical reactions between the surface and the reactive species. *Fleming* therefore cannot anticipate claims 1-11, 19-29 and 31.

III. Rejections under 35 U.S.C. §103(a)

Claim 12 is rejected under 35 U.S.C. §103(a) as being unpatentable over *Fleming* as applied to claim 1 above, and further in view of *Zarowin et al.* in "Rapid Non-Contact, Damage Free Shaping of Optical and Other Surfaces with Plasma Assisted Chemical Etching," 43rd Annual Symposium on Frequency Control 1989, pp. 632-626 (hereinafter, *Zarowin*).

As discussed above, *Fleming* does not anticipate claim 1, which claim 12 is depended from. As discussed in previous amendment on October 8, 2002, *Zarowin* does not anticipate claim 1 either. Therefore, claim 12 cannot be rendered obvious by *Fleming* in view of *Zarowin*, and Applicants respectfully request that the rejection with respect to claim 12 be withdrawn.

Claim 13 is rejected under 35 U.S.C. §103(a) as being unpatentable over *Fleming* as applied to claim 1 above, and further in view of U.S. Patent 5,961,772 issued to *Selwyn*.

As discussed above, *Fleming* does not anticipate claim 1, which claim 13 is depended from. As discussed in previous amendment on October 8, 2002, *Selwyn* does not anticipate claim 1 either.

Therefore, claim 13 cannot be rendered obvious by *Fleming* in view of *Selwyn*, and Applicants respectfully request that the rejection with respect to claim 13 be withdrawn.

Claims 13 and 15 are rejected under 35 U.S.C. §103(a) as being unpatentable over *Fleming* as applied to claim 1 above, and further in view of *Böhn et al.* in DE 199 25 790 A1 (hereinafter, *Böhn*).

As discussed above, *Fleming* does not anticipate claim 1, which claim 13 and 15 are depended from. As discussed in previous amendment on October 8, 2002, *Böhn* does not anticipate claim 1 either. Therefore, claim 13 and 15 cannot be rendered obvious by *Fleming* in view of *Böhn*, and Applicants respectfully request that the rejection with respect to claim 13 and 15 be withdrawn.

Claim 14 is rejected under 35 U.S.C. §103(a) as being unpatentable over *Fleming* and *Selwyn* as applied to claim 13 above and further in view of U.S. Patent 6,068,784 issued to *Collins*.

As discussed above, *Fleming* and *Selwyn* do not anticipate claim 1, which claim 14 is depended from. As discussed in previous amendment on October 8, 2002, *Collins* does not anticipate claim 1 either. Therefore, claim 14 cannot be rendered obvious by *Fleming* and *Selwyn* in view of *Böhn*, and Applicants respectfully request that the rejection with respect to claim 14 be withdrawn.

Claim 14 is rejected under 35 U.S.C. §103(a) as being unpatentable over *Fleming* and *Böhn* as applied to claim 13 and 15 above and further in view of U.S. Patent 6,068,784 issued to *Collins*.

As discussed above, *Fleming* and *Böhn* do not anticipate claim 1, which claim 14 is depended from. As discussed in previous amendment on October 8, 2002, *Collins* does not anticipate claim 1 either. Therefore, claim 14 cannot be rendered obvious by *Fleming* and *Böhn* in view of *Collins*, and Applicants respectfully request that the rejection with respect to claim 14 be withdrawn.

IV. Conclusion

In light of the above, it is respectfully submitted that all of the claims now pending in the subject patent application should be allowable, and a Notice of Allowance is requested. The Examiner is respectfully requested to telephone the undersigned if he can assist in any way in expediting issuance of a patent.

The Commissioner is authorized to charge any underpayment or credit any overpayment to Deposit Account No. 06-1325 for any matter in connection with this response, including any fee for extension of time, which may be required.

Respectfully submitted,

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